

## **San Luis Drainage Feature Re-Evaluation**

U.S. Department of the Interior – Bureau of Reclamation

# **SAN LUIS DRAINAGE**

## **FEATURE RE-EVALUATION**

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### **Meeting Summary**

### **Stakeholder Workshop**

**March 6, 2002 – Santa Nella, California**

### **Alternatives Formulation Workshop**

Reclamation is developing and reformulating alternatives for the San Luis Unit Drainage Feature Re-evaluation. In preparing these alternatives, Reclamation developed a set of guiding assumptions to assist the team in refining the preliminary alternatives and identifying a short list of alternatives for detailed evaluation in summer 2002. Reclamation hosted an all-day workshop for stakeholders to provide input and discuss how each alternative might be optimized. Participants were presented with information about each alternative by the project team. Reclamation then asked participants to provide input on the alternatives, the assumptions within each alternative, and any other pertinent project features.

### ***Meeting Purpose and Objectives***

- Review and discuss approach to alternatives formulation
- Review current alternatives
- Obtain input to make alternatives complete

#### ***Objectives for breakout sessions:***

- Present assumptions for each alternative
- Discuss specific factors for making alternatives complete
- Identify areas for improvement and optimization

### ***Project Overview and Alternatives Refinement Process***

Jason Phillips, Reclamation, provided an overview of the project. A brief review of the court order and a timeline showed that Reclamation is in the process of refining and evaluating alternatives. Jason briefly covered the process that was used to formulate alternatives

Stakeholders were then separated into three groups that were directed to separate breakout sessions to discuss alternatives: ocean outfall, Delta outfall, and landfill. Each group discussed an alternative for about an hour and then the groups rotated to the next alternative. The following summaries document the comments and suggestions on each alternative.

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### ***Ocean Outfall***

Marian Echeverria, Reclamation, opened the group discussions with introductions of the presenters and an overview of what the Ocean Outfall group was to cover. The following set of questions was introduced to the groups to help move discussions toward the topics that will assist Reclamation:

#### **OUTFALL:**

- Are there additional, specific regulatory requirements that may affect the location of an ocean outfall?
- Are there new or additional sensitive areas that would influence the outfall location?
- Are there other outfall locations that would be preferable?
- What factors do you consider most important for identifying the optimal ocean outfall alternative?

#### **PIPELINE ROUTE:**

- Are there new sensitive areas that may affect pipeline routing?

Bill Thompson, Reclamation, provided an overview of the ocean outfall alternative using a Central Valley map to describe potential pipeline/tunnel routes. Three potential outfall sites were identified along the California coast: Santa Cruz, Big Sur, and Point Estero. Potential routes for pipelines or tunnels were also identified. Richard Reines, Reclamation, provided an overview of the State and Federal regulations that would apply to the drainage alternatives. Limitations on drainage concentrations were also identified. Vince Riedman, Reclamation, presented Geographic Information Systems (GIS) maps focused on the study area. The maps highlighted various local attributes that may limit or prevent siting of a route for an ocean outfall.

In general, the stakeholders felt that ocean outfall would present a number of challenges for Reclamation between wildlife species, regulations, and local sentiment. For the sites considered, a number of studies and project have been completed along the coast that may provide more information about the potential for an outfall site. The groups encouraged Reclamation to explore the possibility of partnering with others to develop a facility that serves a wider region as well as shares the expense.

Each group provided comments, suggestions, and questions for the Reclamation team. The information received will help shape the final alternatives designed by the Reclamation team. The following are comments and questions posed by the group:

#### **Concerns and Issues at Outfall Locations**

- A high level of public resistance is present in Santa Cruz, especially from groups such as the Surfrider Foundation.
- In Monterey Bay, the coastline is very rugged making any physical construction difficult. Additionally, permits are difficult to obtain. Monterey Bay probably will present much stricter policies for water quality.
- To the Coastal Water Quality Control Board water temperature is a factor they consider in permit. Reclamation must consider any effect of currents on dispersal of water disposed to ocean.
- The California coast is host to many plant and animal species of concern. Beyond the areas already identified, add in feeding areas of elephant seals (e.g. Piedro Blanco).

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- Reclamation should consider using many smaller outfalls rather than one large outfall. Diffusion from using numerous smaller flow pipeline versus a single large outfall may result in less significant impacts.

### **Regulations (Federal – State – Local)**

- For ocean outfall, the distance from the coastline determines what permits may be required. Reclamation may avoid a discharge permits if pipeline extends over a specific distance from the coastline in some location.
- Reclamation should include restrictions on pesticides/herbicides/growth regulators in regulations list.
- When the original San Luis Drain was constructed, the National Environmental Policy Act (NEPA) was not yet in place. If the future project utilizes sections of the installed drain, should the NEPA analysis address impacts of original drain? Areas near Santa Nella were affected by the original drain with no mitigation.

### **Project Design (Pipeline/Tunnel – Power)**

- Some roads, tunnels, and canals that are currently in place may serve as appropriate routes to follow for a conveyance system. Pacheco tunnel may serve as an appropriate route. The coastal pipeline for the California Aqueduct could serve as an appropriate system to parallel. A potential pipeline route may include access by Highway 46 through Atascadero.
- The pipeline size should account for some excess capacity to account for rain events and emergency situations.
- Reclamation must determine the economic difference in pumping brine versus untreated drainage water.
- Since this is a federal project, Reclamation should qualify to utilize project power to reduce cost. At this point why isn't project power assumed? Reclamation should also thoroughly examine the potential for power generation along the pipeline.
- When the final pipeline releases to the ocean, what would the dispersal plume look like? Reclamation should model the plume as part of ocean outfall studies.

### **Alternative Outfall Locations**

- Utilizing the already existing part of the San Luis Drain may be an option if an outfall location was routed through the Delta to the ocean. Look at the Delta route for disposal to the ocean by connecting a pipe to the San Francisco outfall.
- What options exist for locations farther south? Oxnard and Grover Beach were noted as potential southern sites.
- Environmental resistance in general will be greater on coast. Instead, look for someone who wants water and let them treat it (e.g. Salinas recharge). Potential reuse opportunities in Salinas Valley. Salinas has a groundwater overdraft problem and this drainage water could be a source of recharge. Salinas would need to deal with any necessary treatment.
- Consider sites where the drain water would be a resource rather than a disposed material. What about Mexico?

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### **Potential Project Partners**

- City and state agencies could potentially have use for a pipeline to tap into for wastewater disposal. Reclamation should consider designing pipeline to serve those partners and in return share the facility construction and maintenance costs. Begin strategizing how to develop community support and enlist industry partnerships
- Reclamation has proposed a conveyance system through pipelines or tunnels. Reclamation should consider leaving sections of the route exposed to open air and sun for in-transit “treatment” exposure.
- Reclamation may find partners that exist outside of the San Luis Unit that are also in need of drainage service. These outside partners could be included to defray construction and facility maintenance costs.

### **Other Studies/Projects to Reference**

- *Morro Bay Resource Conservation District and Monterey Bay Natural Resources Conservation Service* – Watershed permitting requirements.
- *Natural Resources Conservation Service* – Research into Selenium disposal. (Contact Kerry at Hanford office)
- *Westside Resource Conservation District* - Selenium level will likely decrease overtime (over 40 years). Potential to use oil wells of Coalinga to store initial “plug” of higher Selenium water. This concept for this is a temporary “underground reservoir.”

### **Project Impacts (environmental – economic)**

- Reclamation needs to determine the volume of drainwater needed for an economically feasible ocean outfall.
- Mankind has consistently changed the outflow of materials from land to ocean. Disposal to ocean could actually be beneficial since eons of natural drainage has been impeded.

### **Other Comments**

- Reclamation should consider combinations of the alternatives. One potential option is after completing the in-valley reverse osmosis, dispose of the solid waste in the ocean. Instead of constructing a pipeline to the ocean, solid waste could be trucked out to barges to dump offshore.

## ***Delta Outfall***

Bob George, Reclamation, provided an overview of the Delta Outfall alternative of the San Luis Drainage Feature Re-evaluation. In the overview, Bob discussed the regulatory (both state and federal) and physical elements that had constrained the design and construction (partially completed) of the original drain, as well as the current regulatory and physical constraints that Reclamation would need to consider to analyze a revised Delta Outfall option. Additionally, Terry Cooke, from the consulting team, described the various methods available for removing selenium from drainage water. Both presenters urged stakeholders, to help Reclamation better

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understand regional and local regulations that may affect the proposed Delta Outfall. Participants were also asked to provide comments and suggestions regarding the proposed alternatives that may provide for a more successful Delta Outfall alternative.

The following set of questions was introduced to the groups to help move discussions toward the topics that will assist Reclamation:

### **OUTFALL:**

- Are there additional, specific regulatory requirements that may affect the location of a Delta discharge?
- What factors would make a Delta outfall location better or worse than another outfall location?
- Is there another potential outfall location the team should evaluate?

### **PIPELINE ROUTE:**

- Are there new sensitive areas that may affect pipeline routing?

In summary, the groups provided the following comments:

1. Reclamation needs to understand the full range of existing and reasonably expected water quality thresholds that would apply to a Delta Outfall alternative. This would include differentiating between a strict part-per-billion criterion, and an approach that utilizes Total Maximum Daily Loads (TMDL's).
2. Moving the outfall location further west (to or past the Carquinez Straits) would be preferable. Though the group recognized that the logistics of getting the outfall to that location would be difficult.
3. The route originally proposed for the Chipps Island outfall traverses a very populated portion of eastern Contra Costa County, and may be more difficult to access. It may be preferable to utilize an existing outfall if it can handle the expected amounts of drainage discharge.
4. Stakeholders were concerned that the timeframe required to implement a drainage option that included a Delta outfall would not meet the court order, and that Reclamation should clearly state what options would be available to affected farmers in the interim.
5. Reclamation was urged to coordinate this effort with other drainage operations and pilot programs to help develop a unified valley-wide drainage solution.
6. One stakeholder suggested that treated water (with removal of selenium, salt, and other contaminants) could be used to improve the overall quality of water in the San Joaquin River.

The following are the comments and suggestions from workshop participants during the breakout sessions for the Delta Outfall alternative.

### **Regulatory Considerations**

- Should Reclamation consider part-per-billion (ppb) or TMDL standards?
- Reclamation should consider bioaccumulation; 5 ppb may not be an adequate standard.
- Does this effort tie into the RWQCB proposal to drain the whole valley?
- How will Reclamation deal with accumulated selenium, salt, etc. if drainage through the San Luis Drain is started? Natural drainage has been disrupted and needs to be considered.

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- How have baseline selenium, salt, etc. levels been determined? How do they compare to historic values? Reclamation should endeavor to understand historic selenium and salt circulation in the region.
- If treated, can drainwater be used for environmental flows in the San Joaquin River?
- How long would drainage water take to “flush out” of the Bay if input at Chipps Island? Carquinez Straits?
  - Residence time?
  - What are the steady state conditions and how do they affect potential discharge into the Bay?
- Reclamation should consult with refineries in the areas identified for a potential outfall. They have information on discharge practices to the Bay.

### **Outfall Questions and Observations**

- Further westerly (at or beyond the Carquinez Straits) is better.
  - Saltier water eliminates desalinization requirements
  - There are no drinking water intakes beyond Antioch/Pittsburgh
  - Strong tidal flows ensure mixing (about ¼ of the water is flushed from the system with every tidal change)
- Has Reclamation considered that Bay Area stormwater and sewer systems tend to be combined? Pending regulations may require stormwater be separated and treated?
- It may be difficult to combine run-off from agricultural drainage with drainage from municipal sources without having to renegotiate municipal discharge permits.

### **Drain Route Questions and Observations**

- Where will regulating reservoirs be located? Suggest they be covered to avoid a Kesterson type problem?
- Is there an existing right-of-way for the proposed route? A right-of-way analysis should account for growth in the area around the Chipps Island outfall and any point west to the Carquinez Straits. The Carquinez Strait outfall location would be difficult to get to.

### **General Questions and Observations**

- Would the time frames necessary to build a Delta outfall meet the court order? Reclamation should consider interim projects and programs to bring relief to affected farmers sooner. These efforts need to be coordinated between the various local, regional and statewide entities looking into drainage solutions.
- Deep well injection can handle the drainage necessities of the San Luis Drain
- Will sediment in the pipeline be a problem?

### **Selenium Treatment**

- Consider Broadview Water District option for biological selenium removal (hay bales)
- The use of salt tolerant crops should be defined as treatment
  - First phase - "Re-use" – Should be a water district based initiative

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- Biological-based treatment systems may not tolerate re-use water - Don't work against yourself
- Does sediment interfere with the reverse osmosis process? Hardness of water contributing factor.
- Reclamation should consider all selenium treatment methods; the end product is important. The volume of end product is important since it will need to be disposed of in-valley.
- Can reverse osmosis be done regionally?
- The UC Selenium Task Force - Tulare Lake – has input on selenium reactivity with salt water, and practices for discouraging wildfowl use of exposed treatment/holding locations.
- Do we know sources of selenium?
  - Groundwater
  - Early 90's data
  - Drainage rate production data

### ***Landfill***

Scott Irvine, Reclamation, provided a brief overview of the reduction, treatment, and disposal concepts for assembling alternatives that would result in landfill disposal of salts and other drainwater constituents. Participants in the Landfill breakout group provided numerous comments and suggestions regarding the development and refinement of alternatives that would achieve landfill disposal. Generally, many participants were supportive of the options and alternatives in this category. Participants believe that the options included here could be implemented more quickly to provide some drainage service, even if out-of-valley alternatives are selected for ultimate disposal. Many participants also supported development of a comprehensive, integrated solution that includes reuse, reverse osmosis treatment, selenium treatment, evaporation ponds, and a landfill. Most participants also believed that reuse options should be part of all alternatives.

The following set of questions was introduced to the groups to help move discussions toward the topics that will assist Reclamation:

#### **EVAPORATION PONDS:**

- What is the basis for determining the allowable selenium concentrations for the evaporation ponds and for the influent?
- Are there additional, specific regulatory requirements or additional sensitive areas that may affect facility locations?
- What factors do you consider most important for identifying the optimal evaporation pond alternative?

#### **REVERSE OSMOSIS:**

- What factors to you consider most important for identifying the optimal reverse osmosis alternative?

The specific comments and suggestions are listed below:

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## **Scope of the Project**

- Reclamation should clarify the scope of the drainwater collection system. Would it collect drainwater from the wildlife refuges or from other recipients of CVP contract water outside the San Luis Unit?
- Reclamation should also address the salt inputs to the valley from CVP sources.

## **Reuse**

- Reclamation should consider reuse as a primary treatment step for reducing the volume of drainwater requiring treatment or evaporation.
- All of the drainwater should be reused at least once.
- Reuse is already occurring on Westlands lands where the shallow groundwater is in the root zone, where it irrigates crops.
- Reclamation should review the existing information on plant types and performance for reuse systems.
- Reuse systems at the individual farm or regionally by district can be effective (as compared to treatment options, which are more difficult to implement on each farm).

## **Evaporation Ponds**

- Reclamation should consider designing the ponds with liners that comply with landfill requirements so the pond could be closed and capped in place at the end of its useful life.
- Reclamation should review existing permits that require scraping the bottom of the evaporation ponds when the pond is dry (Westlake Farms) to determine if this would be required for larger ponds.
- Reclamation and the regulatory agencies should re-examine the 1,000 ppb selenium limit for the ponds in light of the very high levels of naturally occurring selenium in some areas.
- Reclamation should clarify the depth of groundwater that would have to meet the 3,000 ppm TDS standard for siting evaporation ponds.
- Reclamation should clarify that the ponds would operate sequentially.
- Reclamation should clarify the extent of mitigation that would be required for the evaporation ponds and how close it would have to be to the ponds.
- Reclamation should continue to evaluate the feasibility of netting – it may be more cost effective than other types of mitigation that may be required.
- Reclamation should consider if the Environmental Water Account could be a source of water for the mitigation areas.
- Evaporation ponds should be minimized because mitigation for them is a moving target that creates future uncertainty.
- Evaporation ponds on a farm-by-farm basis are difficult to regulate and implement; regional evaporation ponds make more sense

## **Reverse Osmosis**

- Reclamation should clarify that there are no alternatives that would dispose of reverse osmosis brine in liquid form to landfills.



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- Reclamation should address the variable quality of drainwater in the evaluation of reverse osmosis – reverse osmosis facilities cannot deal with variability of drain water.
- Reclamation should review the legal issues associated with ownership of the reverse osmosis product water. If the water were still CVP water, resale of water would be subject to restrictions on sale and transfer.
- The value of reverse osmosis product water would be greater than agricultural water – reverse osmosis product water is from collected subsurface water, which has no pesticides; \$150/AF is too low a figure for water value.
- There may be sufficient demand in some communities for direct use of reverse osmosis product water.
- Reclamation should consider locating facilities near power plants where the power plant could use reverse osmosis product water and Reclamation could use waste heat from the power plant for thermal treatment.

### **General Comments and Suggestions**

- For the Grasslands area, the best solution would be for Reclamation to provide the tools and resources to reuse and treat drainwater at the district level.
- Reclamation should assemble a comprehensive solution with re-use, reverse osmosis, and selenium treatment.
- The front end of the process (reuse and concentration steps) should be flexible for individual or district control and the back end (treatment and disposal) should be centralized to ensure control and regulation.

## ***Drainage Management***

Jason Phillips, Reclamation, presented information describing Reclamation's definition of drainage management. The relationship between Source Control, Land Retirement, and On-Farm/In-District Management was illustrated.

The following set of questions was introduced to the group:

- What is the potential for achieving maximum source control?
- What is the best way to implement source control measures?
  - Individually at each farm
  - Regionally by water district
  - Regionally by Reclamation
- What assumptions should Reclamation make about land retirement and why?

Stakeholders provided input for Reclamation. In general, stakeholders viewed drainage management as a very important step and that implementation should remain flexible throughout the project area. Flexibility is important to adapt to variable drainwater in the San Luis Unit. The drainwater varies depending on geology, land-use, and other factors. Stakeholders agreed that individual farms, water districts, and Reclamation are all responsible to implement drainage management projects. A combination of various practices is the feasible way to achieve the goal of reducing selenium, salt, and other contaminants in drainwater. The following is a collection of comments and questions provided by the group.

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## **Project Scope**

- “Source Control” terminology is confusing. Reclamation should consider using a different term to appropriately encompass all that Reclamation will provide.
- The project area must be well defined geographically. Reclamation should clarify which water districts are included in the San Luis Unit and define who will receive drainage service.
- Reclamation should analyze drainage need according to local unique subareas to meet demands of distinct areas. The San Luis Unit varies greatly in nature and drainage need from one end to other.
- Reclamation was directed by the court order to provide drainage service to the San Luis Unit. Can Reclamation “contract” that to individual farmers or water districts to handle drainage?
- The court order states that Reclamation is to provide drainage service promptly. Source control does not constitute drainage service.
- The least cost alternative would require unique actions at the farm level. Reclamation should provide financial participation to farms and water districts doing drainage management activities (e.g. District should not have to pay for tiling).
- Wetland mitigation projects will most likely be a part of the project depending on the practices implemented. Reclamation will probably have to find property outside of the San Luis Unit for those mitigation projects.
- The collected materials may be marketable, depending on treatment methods and final product constituents. Reclamation could market the final sludge to defray cost from regional collection site.

## **Drainage Need**

- Reclamation should clarify the drainage volume the team is designing for? How does high volume vs. concentrated water affect feasibility of alternatives?
- Reclamation has set potential goals for acceptable drainage rates based on information collected from previously completed reports. Reclamation should design for peak flows instead of limiting the amount of drainage capacity.
- Reclamation should aim to achieve a drainage need of less than 0.3 Acre Feet/acre

## **Land Retirement**

- How would retired lands be managed? Since fallow land would still require drainage, who will be responsible?
- It is not the goal of this project to retire land. Reclamation is considering how proposed land retirement actions could affect the drainage service alternatives.
- With Reclamation’s goals to reduce the amount of drainwater, it does not make sense to put water on retired lands. The lands that are likely to be retired are the acres that are considered impaired. If water were applied to those lands for mitigation purposed, then drainage service would still be required.

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## ***Meeting Evaluation***

Stakeholder provided input on how the workshop was conducted and provided suggestions for future workshops.

### **Good Elements of the Workshop:**

- Project objectives well outlined
- Smaller groups more effective for getting input
- The expertise of the team was here and available for discussion

### **Elements to Change:**

- Readable Handouts - Powerpoint slides too dark to copy well
- Need better definition of project scope – handouts plus maps!
- Coastal interests that could be affected should be included
- Follow up with knowledgeable individuals for detailed input and identify follow-up actions during workshops.
- Use us [stakeholders] as a resource!
- Audio/video recording to share results with others who cannot participate
- Have a hydrologist present for technical questions

### **Workshop Participants**

Bill Beckon, US Fish and Wildlife Service  
Thad Bettner, Westlands Water District  
Jeff Bryant, Firebaugh Canal Water District  
Tom Carberry, Carberry Farms, Inc.  
Dick Cline, Roscoe Moss Co  
David Cory, San Joaquin River Exchange Contractors  
Nettie Drake, B&N Enterprises  
Dennis Falashci, Panoche Water District  
Russ Freeman, Westlands Water District  
Mike Gardner, Panoche Water District  
Richard Harriman, California Natural Resources Foundation  
Alex Hildebrand, Southern Delta Water Agency  
Betty Hurly, Panoche Water/Drainage District  
Dan Kippen, Smiland & Khachigan  
John Kopchik, Contra Costa County Community Development Department  
Mel Lytle, PhD., San Joaquin County Water Resource Division  
Cork McIsaac, Ag Industries Inc  
David Nesmith, Facilitator  
Fred Olmsted, Airway Farms  
Gary Perez, Friant Water Users Authority

## **San Luis Drainage Feature Re-Evaluation**

Dora Rosas, Broadview Water District  
Ron Rowe, CALFED  
Carla Scheidlinger, Agrarian Research  
Roy F. Senior, Jr., Zim Industries, Inc.  
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### *Reclamation Team:*

Bill Luce, Reclamation  
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Scott Irvine, Reclamation  
Jason Phillips, Reclamation  
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Patricia Roberson, Reclamation  
Bill Thompson, Reclamation  
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### *Consulting Team:*

Susan Paulsen, Flow Science  
Charles Gardiner, Public Affairs Management  
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Susan Hootkins, URS  
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